

Looping Exercises

FOR loops

(Counter Controlled Loops)

Do things a set number of times:

```
for counter in range(10):  
    print("Computing FTW")
```

Count how many times you have done something:

```
for counter in range(10):  
    print("This is step" , counter)
```

Repeat between two numbers:

```
for counter in range(7,12):  
    print("Currently working through Year" , counter)
```

Task List A - Warming up

1. Create a program that will ask for your name and then say "Paul is the best!" (using your name of course!) 20 times.
2. Create a program that will ask for a number and then print "Computing FTW" that many times.
3. Create a program that will print out all of the numbers from 0 to 42.

Task List B - Applying your skills

1. Create a program that will ask for 2 numbers and then print out all of the numbers between them. e.g. choose 2 and 5, the program will print out 2, 3, 4 and 5.
2. Create a program that will print out the 3x table (e.g. $1 \times 3 = 3$, $2 \times 3 = 6$, etc... up to 12×3).
3. Extend the program so that you can choose which times table to use.

Task List C - Stretch and challenge

1. Nested loops are loops within loops. Ask for a name and then use nested loops to print out the lyrics to happy birthday 3 times. Remember that the first line is repeated twice.
2. The modulus operator (%) tells you the remainder of a division.
e.g. $7 \div 2 = 3r1$, so $7\%2 = 1$
e.g. $6 \div 2 = 3r0$, so $6\%2 = 0$

Use this to write a program that will print out all the numbers from 0 to 100 that can be divided exactly by 3 with no remainder.

3. Extend the previous program so that the user can select the range of values and which divisor to use.
4. Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

Looping Exercises

WHILE loops

(Condition Controlled Loops)

Do things as long the answer is yes:

```
answer = "y"
while answer == "y":
    answer = input("Is Mr. Clarkson awesome? y/n: ")
```

Do things until you reach a number:

```
total = 0
while total < 20:
    number = int(input("Enter a number: "))
    total = total + number
    print("Total =", total)
```

Validate an input:

```
year = int(input("What year are you in? "))
while year < 7 or year > 13:
    print("Invalid response, must be between Y7 and Y13")
    year = int(input("Try again. What year are you in? "))
```

Task List A - Warming up

1. Look at the first example. Create a program that will ask for a word. Make the program repeat until you enter the word "dog".
2. Look at the first example. Create a program that will ask for a number. Make the program repeat until you enter that number.
3. Look at the second example. Create a program that will keep asking for a number and will keep adding up a total. The program should stop when you enter the number 0.

Task List B - Applying your skills

1. Look at the third example. Create a program that will ask for a shoe size and will check that it is between size 1 and size 13.
2. Create a program that will ask for a user's gender. It should keep asking until the user enters "m", "f", "male" or "female".
3. Create a program that will ask for a student'

Task List C - Stretch and challenge

1. Create a program that will ask for a name and a number. The program should repeat until the name is the same length as the number.
2. The modulus operator (%) tells you the remainder of a division.
e.g. $7 \div 2 = 3r1$, so $7\%2 = 1$
e.g. $6 \div 2 = 3r0$, so $6\%2 = 0$

Use this to write a program that will repeatedly ask for a number until you give it a multiple of 3.

3. Extend the previous program so that the user can select which divisor to use.
4. Write a program generate a random number. The program will then ask for the user to guess the number until they are correct.
5. Extend the previous program to tell the user how many goes it took to get it right.